

SOV/78-4-2-36/40

Saturated Vapor Pressures of Solid Lead Fluoride

procal temperature, is more inclined than that found by data of Wartenberg and Bosse. The sublimation and evaporation heat at an absolute temperature was calculated and compared to the values given in the literature. The value $\Delta H_o^0 = 53.3 \pm 1.0$ kcal/mol

was suggested as being the most plausible. G. V. Khalturin participated in the investigation. There are 1 figure, 2 tables, and 6 references, 3 of which are Soviet.

SUBMITTED: July 2, 1958

Card 2/2

IOFA, B.Z.; BOBROV, L.V.; RATOV, A.N.

Certain properties of carrier-free radioactive lanthanum
and bismuth in water-dioxane solutions. Radiokhimiia 1
no.6:674-678 '59. (MIRA 13:4)
(Lanthanum--Isotopes) (Bismuth--Isotopes)
(Dioxane)

IOFA, B.Z.

Use of internal electrolysis for separating certain radio-
elements without a carrier. Radiokhimiia 1 no.6:706-708
'59. (MIRA 13:4)

(Electrolysis) (Bismuth--Isotopes) (Lanthanum--Isotopes)

5.4210(A)

68216

~~5(2), 5(4)~~

AUTHORS:

Nesmeyanov, An. N., Iofa, B. Z.,

Polyakov, A. S.

S/078/60/005/02/002/045

B004/B016

TITLE:

Pressure of Saturated Vapor of Solid Indium Antimonide 21

PERIODICAL:

Zhurnal neorganicheskoy khimii, 1960, Vol 5, Nr 2, pp 245-248
(USSR)

ABSTRACT:

The measurement of this pressure was made by a modified method of Knudsen (Refs 7,8) by adding Sb^{124} and In^{114} at temperatures between 636 and 720°K. The two substances with active isotopes added were fused together in quartz capillaries. The radiograms taken by Yu. P. Simanov at the khimicheskii fakul'tet MGU (Chemical Department of Moscow State University) confirm the occurrence of one single phase of InSb. The condensate obtained on determination of the vapor pressure was transformed into sulfides the activity of which was measured. The value of the vapor pressure of InSb determined by evaporation of radioactive In is by far higher than the value resulting from the determination of the evaporated Sb (Tables 1,2, and Fig). The values obtained by measuring the evaporated Sb are practically in agreement with the pressure of the saturated

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Pressure of Saturated Vapor of Solid Indium
Antimonide

68216

S/078/60/005/02/002/045

B004/B016

vapor of pure metallic Sb (Ref 7) whereas the vapor pressure determined by In corresponds with that of solid InSb. Prior to evaporation, a partial dissociation of the compound occurs. The vapor pressure above the solid InSb equals the vapor pressure of the metallic Sb plus the vapor pressure of InSb. The vapor pressure of the metallic In is negligible at the temperatures applied. The authors point out that the determination of the vapor pressure with freshly prepared InSb gives increased values. By pulverization of the substance, a disturbance of the crystal lattice occurs, and a crystal surface with excess energy is formed, as it was likewise observed in As_2O_3 and $ZnAs_2$ (Ref 11). There are 1 figure, 2 tables, and 11 references, 8 of which are Soviet. ✓

SUBMITTED: January 12, 1959

Card 2/2

DAKAR, G.M.; IOFA, B.Z.

Preparation of antimony-125 without carrier by the extraction.
Radiokhimiia 4 no.6:744-746-'62. (MIRA 16:1)
(Antimony--Isotopes) (Extraction (Chemistry))

DAKAR, G.M.; IOFA, B.Z.; NESMEYANOV, An.N.

Extraction of complex acids with oxygen-containing solvents.

Part 1: Extraction of micro- and macroquantities of antimony
(V) with alcohols, ethers, and esters. Radiokhimiia 5 no.4:

428-436 '63.

(MIRA 16:10)

(Antimony isotopes) (Extraction (Chemistry))
(Hydrolysis)

IOFA, B.Z.; DAKAR, G.M.

Extraction of complex acids with oxygen-containing solvents.
Part 2: Calculating the equilibrium constants of antimony (V)
hydrolysis in solutions of hydrochloric acid and investigating
the mechanism of its extraction with di-n-butyl ether.

Radiokhimiia 5 no.4:490-496 '63.

(MIRA 16:10)

(Antimony) (Hydrolysis) (Butyl ether)

ZABORENKO, Kaleriya Borisovna; IOFA, Boris Zinov'yevich; LUK'YANOV,
Valeriy Borisovich; BOGATYREV, Igor' Olegovich;
KONDRASHKOVA, S.F., red.

[Radioactive-tracer technique in chemistry] Metod radio-
aktivnykh indikatorov v khimii. Moskva, Vysshaya shkola,
1964. 370 p. (MIRA 17:12)

IOFA, B.Z.; DAKAR, G.M.

Extraction of complex acids by oxygen-containing solvents. Part 3:
Mechanism of extraction of trivalent antimony. Radiokhimiia 6 no.4:
411-419 '64. (MIRA 18:4)

DAKAR, G.M.; IOFA, B.Z.

Extraction of complex acids by oxygen containing solvents. Part 5:

Extraction mechanism of pentavalent antimony. Radiokhimiia 7

no.1:25-31 '65.

(MIRA 18:6)

IOFA, B.Z.; MITROPANOV, K.P.; PLOTNIKOVA, M.V.; KOPACH, S.

Extraction of complex acids by oxygen-containing solvents. Radiokhimiia
Part 4: Extraction of tetravalent tin. Radiokhimiia 6 no.4:419-425 '64.
(MIRA 18:4)

IOFA, B.Z.; YUSHCHENKO, A.S.

Hydrolysis equilibrium of zirconium compounds. Zhur. neorg.
khim. 10 no.2:558-560 F '65. (MIRA 18:11)

1. Submitted May 3, 1963.

SEMENENKO, K.N.; KEDROVA, N.S.; IOFA, B.Z.

Radiochemical study of sodium chloroberyllate and chloro-
aluminate. Zhur.neorg.khim. 10 no.12:2833-2834 D '65.

(MIRA 19:1)

ACC NR: AP7010727

SOURCE CODE: UR/0189/66/000/003/0067/0070

AUTHOR: Kolesnikova, N. M.; Iofa, B. Z.

ORG: Department of Radiochemistry, Moscow State University (Kafedra radiokhimii Moskovskogo gosudarstvennogo universiteta)

TITLE: Investigation of the state of selenium (IV) in hydrochloric acid solutions

SOURCE: Moscow. Universitet. Vestnik. Seriya II. Khimiya, no. 3, 1966, 67-70

TOPIC TAGS: spectrophotometric analysis, selenium compound, hydrochloric acid, spectrophotometer /SF-4 quartz spectrophotometer

SUB CODE: 07,14

ABSTRACT: A spectrophotometric investigation is presented on the state of selenium(IV) at a temperature of $18 \pm 3^\circ$ in hydrochloric acid solutions. Absorption spectra were measured on a SF-4 quartz spectrophotometer, where cells with the following thicknesses of absorbing layer were used: 0.1, 0.2 and 10 mm. Selenium (IV) solutions were prepared by dissolving selenium dioxide in 12 N HCl or by chlorination of black metallic selenium in 12 N HCl. In the latter case, SeCl_4 was first obtained, and subsequently dissolved in acid. Both methods of preparing the

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UDC: 546:23:535:313:535.399

ACC NR: AP7010727

solutions lead to identical results, however the time to reach equilibrium differs. Thus, when SeO_2 was dissolved in 12M HCl, equilibrium was established in seven days, while in the latter case in one day. The absorption maximum at 310 ± 3 microns can relate to the complex ion SeCl_6^{2-} , while absorption maxima of 345 and 385 microns are possibly related to the effect of the glacial solvent on the electronic states of selenium(IV) and not to any chloride complex of selenium(IV).

Orig. art. has: 2 figures and 1 formula. [JPRS: 40,361]

Card 2/2

ACCESSION NR: AP4027981

S/0205/64/004/002/0279/0283

AUTHOR: Sorokina, O. N.; Anikayeva, I. D.; Iofa, E. I.

TITLE: Protective action of metabolites in radioresistant plants

SOURCE: Radiobiologiya, v. 4, no. 2, 1964, 279-283

TOPIC TAGS: metabolite, radioresistant plant, radiosensitive plant, radioresistant plant extract, barley seed, ionizing radiation, reduced radiosensitivity, Cruciferae

ABSTRACT: The present study investigates the possibility of introducing metabolites of radioresistant plants into radiosensitive plants to reduce the effects of ionizing radiation. The first of three experiments investigates the effects of radioresistant plant extracts acting on barley seeds for 19 hrs before irradiation (4000 r) and for 19 hrs after irradiation, the second investigates the effects of radioresistant plant extracts acting on barley seeds for 24 hrs before irradiation (500 r), and the third investigates the effect of radioresistant plant extracts acting on barley seeds with torn coleorhizas for 1 hr before irradiation. Survivability, growth, and chromosome

Card 1/2

ACCESSION NR: AP4027981

aberrations served as indices. Findings show that a number of radio-resistant plant extracts reduce the radiosensitivity of barley seeds. Various plants of the Cruciferae (mustard family) whose extracts contain mustard oil, rhodamide, thiocarbamide, and glucosides containing sulfur display high radioprotective action. Vitamins and growth promoting substances probably also increase radioresistance. Radio-protection is higher with extracts acting on seeds for a more prolonged period after irradiation. Orig. art. has: 5 tables.

ASSOCIATION: Institut biologicheskoy fiziki AN SSSR, Moscow (Institute of Biological Physics AN SSSR)

SUBMITTED: 18Oct62

ENCL: 00

SUB CODE: 13

NR REF SOV: 003

OTHER: 003

Card 2/2

SOROKINA, O.N.; ANIKEYEVA, I.D.; IOFA, E.L.

Protective action of metabolites of radior resistant plants.
Radiobiologiya 4 no.2:279-283 '64. (MIRA 18:3)

1. Institut biologicheskoy fiziki AN SSSR, Moskva.

IOFA, L.E. Sovremenniki Lomonosova, I.K. Kirilov i V.N. Tatishchev; geografy
pervoi poloviny XVIII v. Moskva, Geografiz, 1949. 91 p. OLC: Unclass.

SO: LC, Soviet Geography, Part I, 1951, uncl.

IOFA, L Ye

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YEREVAN; STOLITSA ARMYANSKOY SSR (ERIVAN; CAPITAL OF ARMENIAN SSR)
MOSKVA, GERRAFGIZ, 1950. 46 P. ILLUS., MAPS. BIBLIOGRAPHICAL FOOT-
NOTES. PHOTOSTAT COPY.

IOFA, L. Ye.

Geography & Geology

Cities in the Ural province. Moskva. Gos. izd-vo geogr. lit-ry. 1951

Monthly List of Russian Accessions, Library of Congress, June 1952. UNCLASSIFIED.

IOFA, L. YE.

Defended his Candidates dissertation in the Geography Faculty of Moscow State University on 2 June 1952.

Dissertation: "Cities of the Urals."

SO: Vestnik Moskovskogo Universiteta, Seriya Fiziko-Matematicheskikh i Yestestvennykh Nauk, No. 1, Moscow, Feb 1953, pp 151-157: transl. in W-29782, 12 April 54, for Off. use only.

IOFA, L.YE.

Russia - Description and Travel

Forerunner of ideas on the division of Russia from the point of view of economic geography, Geog.v shkole no. 1, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

USSR/ Geography - Book review

Card 1/1 Pub. 45 ~ 12/16

Authors : Iofa, L. E.; Ryazantsev, S. N.; and Leont'ev, N. F.

Title : Russian economic maps and atlases

Periodical : Izv. AN SSSR. ser. geog. 1, 86-90, Jan-Feb 1954

Abstract : A review is made of the book, "Russian Economical Maps and Atlases," by A. I. Preobrazhenskiy, published in 1953 by Geographical Publishing Office and containing 329 pages. The book recounts the development of economic maps from their beginning in the 17th century to the present time and finds that their compilation in accordance with scientific principles only began under the Soviet Government. The book does not sufficiently show the connection between the development of statistics and the compilation of economic maps. An outstanding feature of the book is a list of handmade and printed economic maps—1,243 of the latter.

Institution : ...

Submitted : ...

IOFA, L.Ye.

"Life and geographical activity of P.I. Rychkov." F.N. Mil'kov.
Reviewed by L.E. Iofa. Izv. AN SSSR. Ser. geog. no. 5:83-84 8-0
'55. (MIRA 9:1)
(Rychkov, Petr Ivanovich, 1712-1777) (Mil'kov, F.N.)

IOFA, L.Ye.

Tver-Kalinin. Vop.geog. no.49:118-133 '60.
(Kalinin—Economic conditions)

(MIRA 13:8)

ANUCHIN, V.; IOFA, L.; RAKITNIKOV, A.; SAUSHKIN, Yu.; SOLOVTSOVA, T.;
TSEDLER, Ye.

Nikolai Vasil'evich Morozov. Vest. Mosk. un. Ser 5:Geog. 18
no.6:77-80 N-D '63.
(MIRA 16:11)

SAUSHKIN, Yu.G.; SOLOV'YEV, A.I.; YEFREMOV, Yu.K.; KOTEL'NIKOV, V.L.;
IOFA, L.Ye.; DANTSIG, B.M.; BARKOV, S.A.; GRUZINSKAYA, V.A.;
BARKOVA, G.Ye.

V.A.Kondakov, 1886-1959; obituary. Vop. geog. no.54:174-176
'61. (MIRA 15:3)
(Kondakov, Vadim Aleksandrovich, 1886-1959)

IVANTER, V.S.; MITROFANOV, A.Ye., red.; IOFA, M.A., otv. red.

[What to read about the construction of logging roads;
index of recommended Russian literature for 1958-1960] Chto
chitat' o stroitel'stve lesovoznykh dorog; rekomendatel'nyi
ukazatel' otechestvennoi literatury za 1958-1960 gg. Mo-
skva, 1962. 32 p.
(MIRA 16:2)

1. Moscow. TSentral'naya nauchno-tekhnicheskaya biblioteka
lesnoy i bumazhnoy promyshlennosti.
(Bibliography--Forest roads)

IOFA, M.B.

Thawing frozen ground with an electric needle of simplified design.
Rata. i izobr. predl. v stroi. no.107:20-21 '55. (MIRA 9:7)
(Frozen ground) (Soil heating)

"APPROVED FOR RELEASE: 08/10/2001

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Preparation of cupric acetate. Z. A. IOPA AND L. L. KIVACHKO-GURVICH. *Zhur. Prikladn. Khim.* 3, 501-3(1930).--The following method is recommended for prep. of $\text{Cu}(\text{AcO})_2$ from CuO and AcOH . CuO is agitated with concd. AcOH for 1-2 hrs. $\text{Cu}(\text{AcO})_2$ is formed with evolution of heat (the salt contains 1-8% CuO). The soln., which contains a considerable excess of AcOH , is sep'd. from the ppt. and saved, as it is gradually used up for acidification of the soln., which is obtained at a later stage when the salt is crystd. The ppt. is mixed with the soln., which was obtained from a previous crystn. of $\text{Cu}(\text{AcO})_2$ and heated to 80° with const. stirring. The said soln. thus obtained is filtered and transferred to a crystg. vessel while hot. It is then dil'd with some of the soln., which was saved from the first operation. When the soln. cools to 20° about 40-45% of neutral $\text{Cu}(\text{AcO})_2$ ppt. out. If the soln. is stirred the crystals are small and uniform. The cooled soln. is again sat'd with $\text{Cu}(\text{AcO})_2$ at 80° by repeating the procedure already described, etc. The method was successfully applied on a com. scale at Plant No. 1 of the trust "Lakhrasha" in 1928.

V. KALITHEVSKY

ASM-A LA METALLURGICAL LITERATURE CLASSIFICATION

PROCEDURES AND PROPERTIES INDEX																	
B-1-2																	
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<p>Preparation of basic cupric acetate from the normal salt. Z. A. Loga, S. M. Kuzmin, and L. I. Kuvshinov (J. Appl. Chem., Russia, 1960, 2, 366-374).</p> <p>The salt $2Cu(OAc)_2 \cdot Cu(OH)_2 \cdot 5H_2O$ crystalline in blue prisms, white $Cu(OAc)_2 \cdot Cu(OH)_2 \cdot 5H_2O$ (obtained below 65°) forms sky-blue lumps, and $Cu(OAc)_2 \cdot 2Cu(OH)_2$ forms white tablets. The salt $Cu(OAc)_2 \cdot Cu(OH)_2 \cdot 5H_2O$ is prepared from the normal acetate, calcium oxide, and copper sulphate.</p> <p>ORIGINAL ABSTRACTS</p>																	
ASAC-3.4 METALLURGICAL LITERATURE CLASSIFICATION																	
<table border="1"> <thead> <tr> <th>SEARCH SYMBOLS</th> <th>SEARCH MAP ONLY USE</th> <th>REVISIONS</th> <th>REVISIONS ONLY USE</th> </tr> </thead> <tbody> <tr> <td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</td> <td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</td> <td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</td> <td>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100</td> </tr> </tbody> </table>										SEARCH SYMBOLS	SEARCH MAP ONLY USE	REVISIONS	REVISIONS ONLY USE	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100
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Conductometric and potentiometric methods of analysis
and their application to continuous and automatic control
of production processes. Z. A. Iula. Zaslavskii Lab.
1933. No. 7. 9-17.—A review. M. C. de Mohai

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

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"The Tungsten Electrode and its Temperature Coefficient. Z. A. Iifa and B. I. Petrov (*Zavod. Lab. (Works' Lab.)*, 1934, 8, 726-731; *Brit. Chem. Abs.*, 1934, [A], 1176).--[In Russian.] The potential of the tungsten electrode over the p_H range 4-10 is given by $E = A + b p_H$, where A and b are constants characteristic of the electrode and of the temperature, respectively; the p_H is given by $p_H = \{E - A + (c - 18)[20.3 + 0.24(c - 18)]\} / 8.6$.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION
SBDW STVHJZIV

COMMON ELEMENTS
OPEN SHEET
MATERIAL INDEX

PROCESS AND PROPERTIES INDEX
1ST AND 2ND ORDERS

1ST AND 2ND ORDERS										PROCESSES AND PROPERTIES INDEX										3RD AND 4TH ORDERS									
<p>ext</p> <p>The preparation of copper sulfate from copper ores was by the action of sulfur dioxide and air. Z. A. Jahn and S. M. Kozlov. <i>J. Chem. Ind. (Moscow)</i> 1954, No. 7, 41-4.</p> <p>When a mixt. of SO_2 and air is passed into a suspension of pure CuO, univalent Cu ions are formed and a complex ppt. of $CuSO_4 \cdot Cu_2SO_4 \cdot 2H_2O$ appears. Salts of Fe mixed with small amounts of other heavy metal ions prevent this pptn. and permit easy formation of $CuSO_4$. Since natural Cu ores contain these catalysts, such ores give good yields of $CuSO_4$ by this treatment. H. M. Leicester</p>																													
<p>ASB-55A METALLURGICAL LITERATURE CLASSIFICATION</p>																													

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Litharge by electrolytic solution of lead in a double-diaphragm cell. Z. A. [unpubl., Appl. Chem. (U. S. M. & O. 3, 317-411 (Engl. 411) (1935)]. The anolyte soln. of Pb was casted out in a diaphragm cell on a cath. as well as a conc. anolyte. Anolyte soln. of Pb in 20% perchlorate soln. or NaClO₄ at a c. d. of 0.2 (10-100 amp. eq.) proceeds at almost 100% current efficiency at 2 to 3.2 v. When discharging 84 cc. of the anolyte from the cell and 128 cc. of the catholyte per amp. hr., the concn. of the anolyte amounts to 0.5 equiv. with respect to Pb. The equiv. amt. of caustic formed at the cathode is used for the quant. pptn. of Pb as Pb(OH)₂ and for a simultaneous regeneration of the electrolyte. Pb(OH)₂, because of its great reactivity, may be used in the prepn.

various Pb compounds. If the anodic process is carried out in a proper manner concentrated Pb can be used to produce pure products because of the electrolytic anodic refining effect. A high-grade cryolite litharge can be obtained directly from soda. Eight references. A. A. B.

ADDITIONAL DETAILING LITERATURE CLASSIFICATION

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41

Electrochemical purification of phosphoric acid. Z. A. Iofa, E. B. Brutskus and V. Ya. Vengerova. *J. Appl. Chem.* (U. S. S. R.) 8, 840-7(1935).—Excess of Cu is added to the 70% acid, and the soln. electrolyzed at M^+ , with a Pt anode and a Cu cathode (c. d. 0.01 amp. sq. cm.). The consumption of current necessary for elimination of As and Pb is 65 kWh. per ton of acid.
B. C. A.

ASH, ISA METALLURGICAL LITERATURE CLASSIFICATION

100000 40	101000 41 42 43 44	102000 45 46 47 48	103000 49 50 51 52	104000 53 54 55 56	105000 57 58 59 60	106000 61 62 63 64	107000 65 66 67 68	108000 69 70 71 72	109000 73 74 75 76	110000 77 78 79 80	111000 81 82 83 84	112000 85 86 87 88	113000 89 90 91 92	114000 93 94 95 96	115000 97 98 99 100
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P

197 and 198 ORDER

PROCESSES AND PROPERTIES INDEX

Paper for the chemical fixation of electric current and for "photography." *J. A. Iida, J. Tech. Phys. (U.S.S.R.) 8, 915-19 (1967).* The method of Arkad'ev (C. S. 20, 2188, 2189) for the chem. fixation of electromagnetic waves on filter paper is studied. Active coherence for "photography." *Ibid. 1967 7.* John L. Cook

ADDITIONAL METALLURGICAL LITERATURE CLASSIFICATION

ADDITIONAL LITERATURE CLASSIFICATION

ADDITIONAL LITERATURE CLASSIFICATION

COMMON ELEMENTS		PROCESSING AND PROPERTIES UNIT	
<p>Influence of stirring on current-voltage curves obtained with a mercury cathode. Z. A. Iofa and A. P. Puzhin. <i>Compt. rend. acad. sci. U. R. S. S.</i> 20, 201-21 (1968) (in English). --Strong jets of soda directed against either the surface of an amalgamated Pt cathode or the point of a dropping Hg cathode prevent appearance of max. in current-voltage curves. Gregg M. Evans</p>		<p>4</p>	
<p>ASB-55A METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>SECTION 17100000</p>		<p>SECTION 17100000</p>	

Overvoltage on mercury in the presence of surface-active electrolytes. Z. A. Anisimov, M. Kalanov, R. Kuchinskii, and P. Chistyakov. *Acta Physicochim. U. R. S. S.* 19, 317-33 (1950) (in Russian). Using a large Hg cathode, the following results of the overvoltage can be obtained down to c. ds. of 10^{-4} - 10^{-5} amp./sq. cm. Using the dropping-Hg electrode method, the range of measurement is from 8×10^{-3} to 10^{-5} amp./sq. cm. The electrocapillary curves for the salts are shown. The changes in H overvoltage on acids of certain salts were: KCl -0.060 v.; KBr -0.105 ; KI -0.230 ; each 1 N $+0.1 \text{ N HCl}$. Also $+0.120$ for 0.025 N (CuCl_2), NiSO_4 , $+1.0 \text{ N H}_2\text{SO}_4$. Surface-active anions decrease, cations increase, the H overvoltage. The $\Delta\zeta$ values are from 0.8 to 0.7 of the shift of the electrocapillary max. referred to the soln. of an inactive electrolyte such as Na_2SO_4 . P. H. Rastumani.

12. 11. 2014

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>Electrocapillary curves at concentrated solutions of acids. Z. A. Loh and A. Franklin. <i>Acta Physicochim. U. R. S. S.</i> 16, 473-80 (1960) (in English).—Data on HCl in concns. from 0.1 to 10 <i>N</i> are given and discussed by means of Lippmann's equation. Cl adsorption is pos. on the anodic branch of the electrocapillary curve; it becomes strongly neg. on the cathodic branch. Adsorption of the H⁺ ion is pos. in dil. solns. and neg. in concd. solns. F. H. Rathmann</p>																			
<p>ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
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1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
<p>PROCESSES AND PROPERTIES INDEX</p> <p>4</p> <p>The hydrogen overvoltage on lead and the capacity of the lead electrode. B. Kabanov and Z. A. Joda. <i>Adv. Physicochem. U. R. S. S. 10, 817-29(1930)(in English)</i>. A smooth, mirror-bright lead cathode was prepd. by shaving with a sharp steel chisel followed by cathodic reduction in H₂ at 10⁻⁴ amp. per sq. cm. The elec. double layer capacity was 18 μF./sq. cm. as for Hg. The overvoltage obeys Tafel's equation, $\eta = a + C \lg i$ with $C = 0.12$ and $a =$ about 1.5 up to potentials of -0.65 v., is practically independent of the concn. of the H₂SO₄ from 0.01 to 2.0 N, and is 0.1 v. higher than for Hg. The considerably lower values of η, and the higher values of i obtained by previous authors are due to traces of impurities, lack of a smooth surface, and incomplete reduction of PbSO₄ on the surface. The true surface of a lead electrode can be detd. by a measurement of the capacity of the double layer. F. H. Rathmann</p>																			
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>																			
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<p>1ST ORDER</p>										<p>2ND ORDER</p>									

IOFA428A8

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1. IOFA, Z. A.

2. USSR (600)

"The Overvoltage on a Mercury Cathode in Concentrated Solutions of Acids" Part I. "Hydrochloric and Hydrobromic Acids," Zhur. Fiz. Khim, 13, No. 10, 1939. MGU, Electro-chemical Laboratory. Received 10 April 1939.

9. [REDACTED] Report U-1615, 3 Jan. 1952.


IOFA428

600

1. IOFA, Z.: USTINSKIY, B.; and EYMAN, F.

2. USSR (600)

"The Electrocapillary Curves of Concentrated Solutions of Acids", Zhur. Fiz Khim, 13. No. 7, 1939. Part II. "The Adsorption of Ions in Solutions of HCl, HBr and H₂SO₄". MGU, Electrochemical Laboratory, Received 9 February 1939.

9.  Report U-1615, 3 Jan. 1952.

The overvoltage on a mercury cathode in concentrated acid solutions. 1. Hydrochloric and hydrobromic acids
Z. A. Tikhonova, *Acta Physicochim. U. R. S. S. R.*, 19, 1031 (1959) (in English); *Chem. Zvesti.*, 1959, 1344.
In 0.1 N HCl or 0.2 N HBr the relation of overvoltage (η) to $\log i$ is linear (slope $b = 0.119$ v.). For NHCl, a linear curve at $\eta = 0.7$; above 3 N the relation is again linear but the slope $b = 0.141$ at 3 N, 0.184 at 5 N. At least the slope $b = 0.12$ N. For 11M the overvoltage is 0.11M at 10 and 0.143 V. at 12 N. For 11M the overvoltage has broken at $\eta = 7.5 \times 10^{-2}$ amp./sq. cm. at 0.2 N, 1.1 has broken at $\eta = 7 \times 10^{-2}$ at 2 N; and is almost linear up to 10 N at 1 N; 7×10^{-2} at 2 N; and is almost linear up to 10 N at 1 N. The decrease of b with increasing concentration is ascribed to discharge of acid molecules in the double layer. F. H. K.

1. KABANOV, B.; FILIPPOV, S.; VANYUKOVA, L.; IOFA, Z.;
PROKOF'YEVA, A.

2. USSR (600)

"The Supertension of Hydrogen over Lead"; Zhur. Fiz. Khim.; 13, No.
3, 1939; Physico-Chem. Insti. imeni L. Ya. Karpova; recd 21 July
1938.

9. ~~Report~~ Report U-1613, 3 Jan. 1952.

157 APR 1964		PROCESSING AND REPRODUCTION INDEX	
<p>Electrocapillary curves of concentrated solutions of acids. I. Derivation of an adsorption equation. A. Franklin and Z. A. Iosad. <i>Phys. Chem.</i> (U. S. S. R.) 38, 931-3 (1964). The equation $\Delta\sigma/(1/P)\Delta\sigma_{\text{max}} = -\Gamma_A/(\Gamma_A' - \Gamma_A)$ is derived, where σ = potential difference, μ = chem. potential, Γ = adsorption of Hg salt or of acid.</p> <p>II. Adsorption of ions in solutions of HCl, HBr and Hg.</p>		<p>90. Z. A. Iosad, B. Ustinskii and P. Elman. <i>Izv.</i> 934-41. — From 0.1 to 20.0 N the course of the electrocapillary curves and of the adsorption of anions and cations as a function of concn. is given by the equations given in part I. The exptl. data are given in 10 tables and 8 figures. F. W. Rathmann</p>	
<p>458-514 METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>15000 04</p>		<p>15000 04</p>	
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1ST AND 2ND COLUMNS

PROCESSES AND PROPERTIES INDEX

Common Elements

Common Variable Elements

Overvoltage of mercury in the presence of surface-active electrolytes. Z. A. Izin, M. Kabanov, H. Kuchinskii and P. Chistyakov. *J. Phys. Chem. (U. S. S. R.)* 13, 1105-10 (1939).—See C. A. 33, 6169. P. H. N.

ASB-51A METALLURGICAL LITERATURE CLASSIFICATION

6-24-42, 11-24-42

6-24-42, 11-24-42

Application of the dropping-mercury electrode to the measurement of overvoltage. Z. A. Aksent'ev, Kolychev and L. Shiffrina. *Acta Physicochim. U. R. S. S.*, 231-42 (1940) (in English).—For medium c. d. the dropping Hg electrode in HCl and HBr solns. up to 0 N yields a linear relation between the overvoltage, η , and \log of the c. d., i , and the coeff. is $2.3 \times (2RT/F)$ as for the stationary electrode. For high c. d. the overvoltage is first owing to a decrease in the size of the drops with decreasing surface tension; for low c. d. it is greater owing to the nonfaradaic current. After correcting for these factors the overvoltage curve is linear but 35-60 mv. above the values for a stationary electrode and is given by $\eta = 0.110 \log [i/(i_0 - i_0)] - 0.116 (i_1/i_2)^{1/2} \times \log (i_1/i_2) + 0.134 + k$, where i_1, i_2 are the initial and final areas of the drops, resp., and i_0 the adherence areas of the drops on the electrode. P. H. R.

Electrochem. Lab., Moscow State U.

A.S.M. S.E.O. METALLURGICAL LITERATURE CLASSIFICATION

BC

A-1

Use of dropping mercury electrodes for measuring overvoltage.
Z. A. Iola and A. N. Koshitsky (*J. Phys. Chem. Russ.*, 1940,
14, 28-30).—For the coeff. b in the equation $\eta = b \log i$,
y being the overvoltage and i the cat. current, different values were
obtained when using stationary and dropping electrodes (cf.
Koryunsky, A., 1937, 1, 239). This discrepancy disappears
if (a) the variation of the surface tension and, therefore, of
the drop vol. with the applied potential is considered; this
correction eliminates the apparent rise of b at high values of i ;
(b) the current used up for charging the growing drop is
subtracted from the observed i ; this correction eliminates
the abnormally low value of b at low i ; and (c) i is referred
to the average surface area of the drop which fluctuates
between a very small and a max. val. $b = 4.5 RT/F$ for both
stationary and dropping electrodes. The experiments were
carried out in 0.01–0.25-N HCl and in 1–5.5*N* HCl.

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1ST AND 2ND ORDERS										PROCESSES AND PROPERTIES INDEX										AI 8																																																																					
BC										Temperature coefficient of hydrogen overvoltage on mercury cathode.																																																																															
2. A. Iofa and K. P. Midulin (J. Phys. Chem. Russ., 1944, 18, 137-142).																																																																																									
The relation between the overvoltage η and current strength (in 0.25n-H ₂ SO ₄)																																																																																									
N-H ₂ SO ₄ is given by $\eta = a + b \log i$ (4.68T log i) F, a being a const.																																																																																									
The temp. variation $d\eta/dT$ is -0.002 v. per degree at $i = 10^{-3}$ amp. and																																																																																									
0.003 at $i = 10^{-6}$																																																																																									
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ASB-52 METALLURGICAL LITERATURE CLASSIFICATION																																																																																									
<table border="1"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td><td>21</td><td>22</td><td>23</td><td>24</td><td>25</td><td>26</td><td>27</td><td>28</td><td>29</td><td>30</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>																														1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30																														
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LIST AND INDEX		PROCESS AND PROPERTIES INDEX	
<p>Overvoltage on a Hg cathode in concentrated solutions. H. HClO₄ and H₂SO₄ and acidified solutions of salts. Z. A. Iola and A. N. Frumkin. <i>J. Phys. Chem. (U.S.S.R.)</i> 18, 268-62 (1944); <i>cf. C.A.B.</i> 33, 8124^o.—Exptl. data on the overvoltage of concd. solns. of HClO₄ and H₂SO₄, as well as of acidified solns. of Na₂SO₄, LiCl, LiBr, and KI as functions of the c.d. are shown. The decreased overvoltage and the anomalous course of the curves in solns. contg. surface-active anions are not related to any kind of depolarization processes. Expts. on solns. of KCl + HCl and of LiCl + HCl showed that in spite of differences in the activity coeffs., equal concns. of acids gave very nearly the same over-voltage values. The adsorption potential found from electrocapillary curves is a linear function of the log of the activities of the acid ions.</p> <p>P. H. Nathmann</p>			
<p>ASTM A11 DETAIL LITERATURE CLASSIFICATION</p>			
<p>107000 107000 107000 107000</p>		<p>107000 107000 107000 107000</p>	

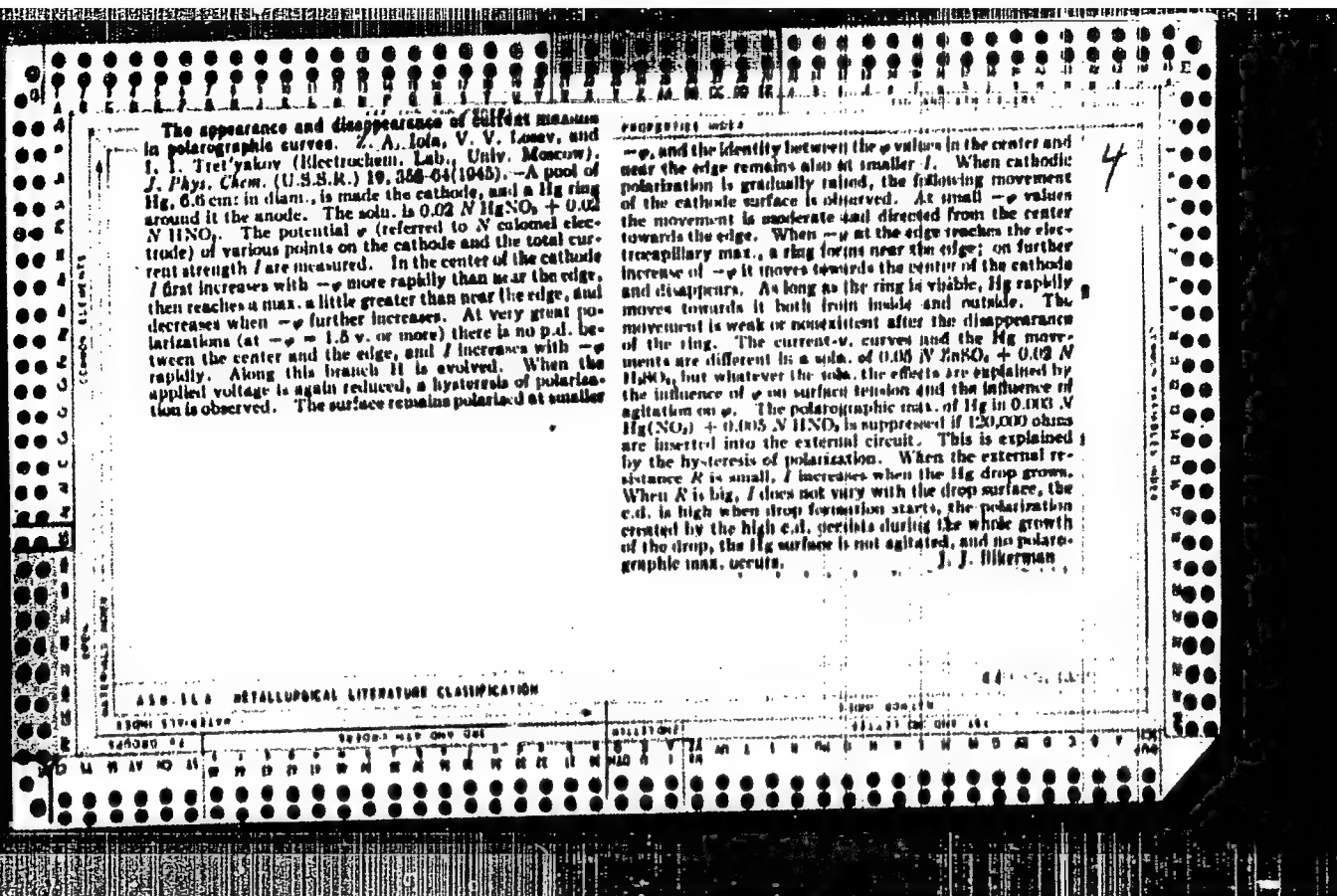
Hydrogen overvoltage at a lead cathode in concentrated acid solutions. Z. A. Gila. *J. Phys. Chem.* (U.S.S.R.) **10**, 117-121 (1945). The overvoltage $\eta = a + b \log i$ (i in c.d.) for HClO_4 and H_2SO_4 at all i values up to 10^{-4} amp./sq. cm., and for HCl and HBr at i greater than about 10^{-4} to 10^{-3} amp./sq. cm. The value of a is the smaller the greater the concn. of the acid, but the decrease is less than the theoretical one for HClO_4 , and especially for H_2SO_4 . In HCl and HBr at small i , a is almost independent of i . This is attributed to depolarization. The potential of Pb in HCl and HBr is not, but that in H_2SO_4 and HClO_4 is, due to the solubility of the Pb salt of the acid. Liberman

J. J. Biberstein

ASB-11.4 METALLURGICAL LITERATURE CLASSIFICATION

Hydrogen overvoltage on a mercury cathode in concentrated solutions of acids. III. Temperature coefficient of overvoltage. Z. A. Icha and V. Stepanov. *J. Phys. Chem.* (U.S.S.R.) 16, 125-31 (1944); cf. *ibid.* 20, 1250-4. The overvoltage η is measured for HCl aq. between 0° and 80°. The value of $d\eta/dT$ (T is temp.) decreases when $\log i$ (i is current) increases for 5, 7 N, and 10 N, and increases with $\log i$ for 3 N and 4 N HCl; all changes being linear. The value of $d\eta/d \log i$ as a function of T passes through a min. for all cases above 5 N. The results are explained by the effect of temp. and current on the adsorption of anions. J. J. Hickman

ASB-54.6 METALLURGICAL LITERATURE CLASSIFICATION



1ST AND 2ND CAGES		PROCESSING AND PROPERTIES INDEX	
<p>Appearance of free atomic hydrogen on the mercury cathode and the mechanism of the cathodic reduction of tungstate. V. S. Bagotskii and Z. A. Iola (M. V. Lomonosov Moscow State Univ.). <i>Chem. Phys. Acad. Sci., U.R.S.S.</i> 88, 439-42(1940)(in English).--The electron cond. of WO_3 is considered as the mechanism for the cathodic reduction of the yellow anhydride WO_3 to the blue W_2O_3 in electrolytic soln. The theory that free at. H in soln. near the cathode acts as an intermediate agent in the reduction process is excluded. Simple expts. are described which support the electron cond. theory and are explained without any assumption as to the appearance of free H in soln. near the cathode. H. M. Philofsky</p>		4	
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>			
<p>SEARCHED INDEXED</p>		<p>CLASSIFIED</p>	
<p>FILED</p>		<p>FILED</p>	

10FFA, Z. 11. 25

Formation of Free Atomic Hydrogen on a Mercury Cathode and the Mechanism of Cathodic Reduction of WO₃. V. S. Brodskii and Z. A. Lofan. *Reports of the Academy of Sciences of U.S.S.R.*, v. 53, no. 5, 1948, p. 448-449.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

6-27/15-13-02

The mechanism of the inhibitor action on solution of iron in acids. V. A. Kuznetsov and G. A. Ieda (State Univ. Moscow). *J. Phys. Chem. (U.S.S.R.)* 21, 291-14 (1947) (in Russian).—The method of polarization curves is used to det. the mechanism of inhibitor action of org. compds. Spectroscopically pure Fe is polarized at 15° for 2-3 min. at a c.d. i amp./sq. cm., and its potential ϕ against a H₂-Pt electrode in N HCl is measured. Curves ϕ against $\log i$ are detd. starting from high cathodic and ending with high anodic polarizations. These curves are parallel to the abscissa at low i values, both in pure N HCl and in the presence of inhibitors. At high i values (e.g., above 10^{-4} amp./cm.²), ϕ increases (for cathodic polarization) or decreases (for anodic polarization) linearly with $\log i$. In the equation $\phi = \phi_0 + k \log i$, k is 0.125 v. along the cathodic and 0.07 v. along the anodic curve in N HCl. Inhibitors (tetraamylammonium iodide (I), narcotine, two quinoline derivs., tribenylamine, tetradecyltetrahydropyridinium bromide, etc.) increase k for both anodic and cathodic processes. The increase is greater for the anodic process, showing that the inhibitor affects soln. of Fe even more than liberation of H₂, contrary to Chappel, *et al.* (C.I., 22, 2910). In the absence of current, the potential of Fe in N HCl is 0.265 v.; in the presence of 10^{-4} and 5×10^{-4} M I it is -0.221 and -0.181 v., resp. When the concn. C of the inhibitor is high, e.g., over 10^{-3} M narcotine, the anodic polarization and the rate of spontaneous soln. of Fe become almost independent of C although the cathodic overvoltage continues to increase with C . The rate of spontaneous soln. is equivalent to 2.7×10^{-4} amp./cm.² in N HCl and to 0×10^{-4} amp./cm.² in N HCl + 5×10^{-4} M I. Aliphatic alic., hexanoic and octanoic acids, benzenesulfonic and α -naphthalenesulfonic acids have no inhibitor effect;

this shows the importance of a cathodic charge. Thiourea accelerates both the soln. of Fe and the liberation of H₂; the effect on the anodic polarization has a max. at $C = 10^{-3}$ M. This max. probably is due to decompn. of thiourea into H₂S, which accelerates the electrode processes, and a N compd. which acts as inhibitor. The stationary potential of Fe is shifted to +0.312 v. by 10^{-3} M and to -0.291 v. by 10^{-2} M thiourea. Unisol P.H. is a polymerization product of butyraldehyde and NH₃. It is used as inhibitor; its 0.5% emulsion lowers the rate of soln. of Fe to 0.01. Unisol very strongly increases cathodic polarization, which also slows hydrogen. It increases also the anodic polarization. Acridine acts similarly. These compds. form protective films. Their lesser effect on anodic polarization presumably is due to reduction of the wettability of the metal by anodic polarization and to damaging the film by the dissolving H₂. The rate of evolution of H₂ by Fe in N HCl without and in the presence of inhibitors without any current increases in time. When extrapolated to zero time, this rate agrees with that detd. from electrochem. measurements. Oxalic acid does not affect, and I and thiourea lower, the size of H₂ bubbles evolved by Fe in N HCl. This shows that inhibitors are adsorbed on Fe. The adsorption of cations enhances the overvoltage of H and retards the transfer of Fe ions into soln. The effects of inhibitors on the cathodic and the anodic processes are different, presumably because H₂ is evolved on the whole surface, whereas Fe is dissolved only along edges, etc. J. J. Bikerman

1ST AND 2ND ORDER		3RD ORDER AND SUBORDINATES	
<p>Excited form of cathodic hydrogen. V. N. Nazarehli, Z. A. Isha, and A. N. Frumkin (State Univ., Moscow). J. Phys. Chem. (U.S.S.R.) 21, 241-4 (1967).—Formation of excited H atoms at the cathode and their oxidation by WO_3 do not occur, contrary to Kobayashi, <i>et al.</i>, C.A. 41, 242i. J. J. Riherman</p>			
<p>ASB-51A METALLURGICAL LITERATURE CLASSIFICATION</p>			
10000 02	10000 03	10000 04	10000 05
10000 06	10000 07	10000 08	10000 09
10000 10	10000 11	10000 12	10000 13
10000 14	10000 15	10000 16	10000 17
10000 18	10000 19	10000 20	10000 21
10000 22	10000 23	10000 24	10000 25
10000 26	10000 27	10000 28	10000 29
10000 30	10000 31	10000 32	10000 33
10000 34	10000 35	10000 36	10000 37
10000 38	10000 39	10000 40	10000 41
10000 42	10000 43	10000 44	10000 45
10000 46	10000 47	10000 48	10000 49
10000 50	10000 51	10000 52	10000 53
10000 54	10000 55	10000 56	10000 57
10000 58	10000 59	10000 60	10000 61
10000 62	10000 63	10000 64	10000 65
10000 66	10000 67	10000 68	10000 69
10000 70	10000 71	10000 72	10000 73
10000 74	10000 75	10000 76	10000 77
10000 78	10000 79	10000 80	10000 81
10000 82	10000 83	10000 84	10000 85
10000 86	10000 87	10000 88	10000 89
10000 90	10000 91	10000 92	10000 93
10000 94	10000 95	10000 96	10000 97
10000 98	10000 99	10000 100	10000 101

Formation of hydrogen peroxide in air-depolarized alkali carbon cells. Z. A. Iida, N. H. Molaveva, S. Ya. Mitina, and H. F. Krymakiya (Khimichesk. Lab., Moscow State Univ.). *Zh. Prikl. Khim.* (J. Applied Chem.) 21, 329-40 (1947).—The air O_2 absorbed in the depolarization process on cold pressed C electrodes of Zn/C cells is mainly converted into H_2O_2 , part of which is eliminated after decompn. in the electrolyte or on the electrode. However, a large part of the H_2O_2 is retained in the cell, and partly accumulates to a stationary concn. depending on the temp., partly, is consumed in depolarization of the Zn electrodes, causing corrosion in up to 70% excess over the amt. of Zn dissolved by the current. Formation of H_2O_2 is effectively counteracted by catalysts which can be either incorporated in advance into the C electrode or deposited on its surface. By the 1st method, 2.6% of $AgNO_3$ or $KMnO_4$ proved most effective; oxides and salts of Co and Ni were tested but found without effect. Better results were obtained by the 2nd method, with $PtCl_2$ deposited on the surface. Catalyzed electrodes have a higher potential, raising the e.m.f. of the cell by 10-20%, particularly at lower temps. Absorption of O_2 from the air is reduced approx. by a factor of 2, and the capacity of the cell is increased by 30-60% owing mainly to the reduced corrosion of the Zn. The action of the catalysts consists in an inhibition of the formation of H_2O_2 .
N. Thon

IOFA, Z. A.

USSR/Chemistry - Hydrogen Peroxide, Generation of
Chemistry - Electrodes, Carbon, Depolarization of
Apr 1946

"The Generation of Hydrogen Peroxide in Alkali Carbon
Electrodes in Depolarization in Air," Z. A. IOFA, N. B.
Moiseyev, S. Ya. Mirina, Ye. Ye. Ryabova, Chair
of Electrochemistry, Moscow State U, and Sci Res
Institute and Electrocarbon Inst, 12 pp

"The Physical Theory" Vol III, No 4

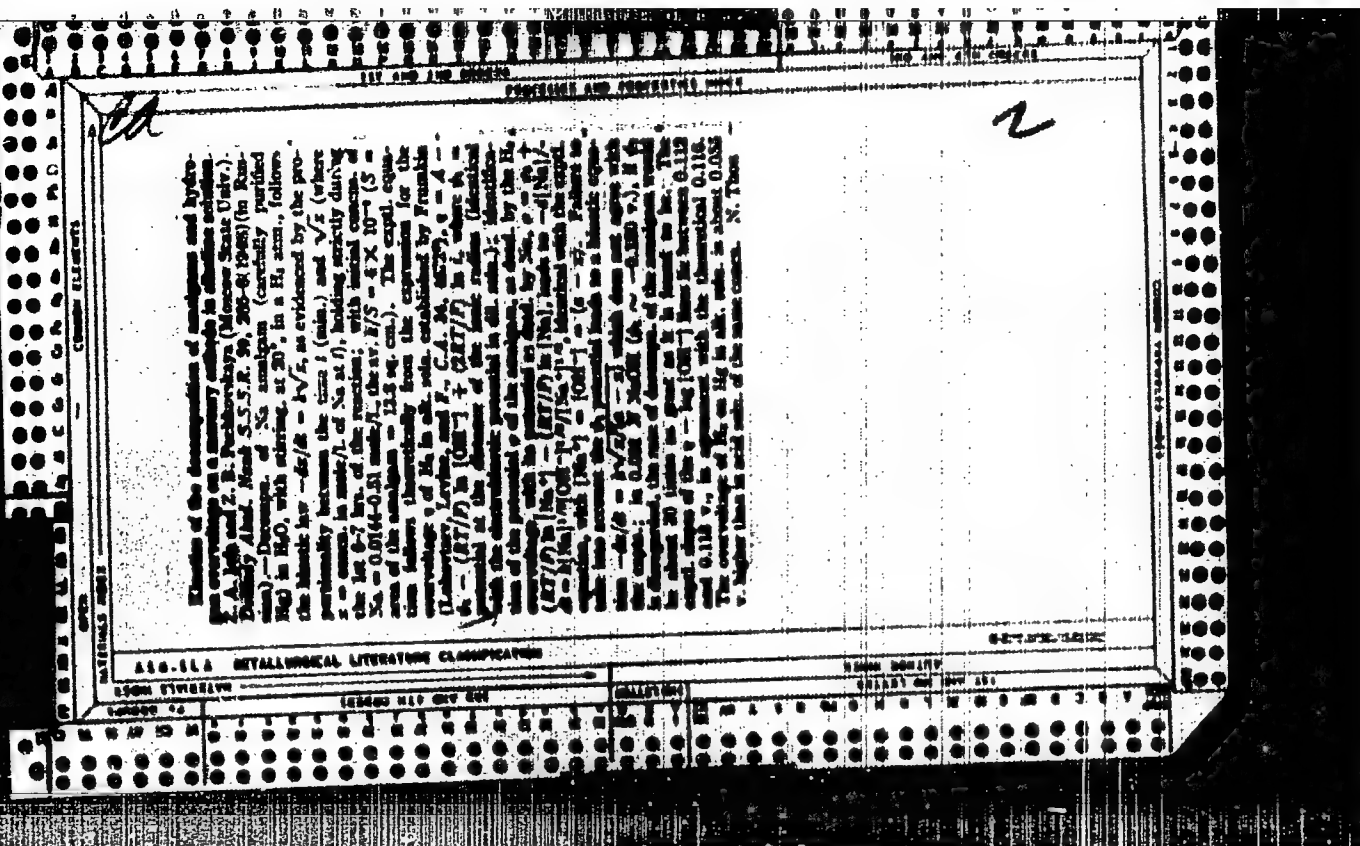
Shows that atmospheric oxygen is absorbed during
process of depolarization of carbon electrodes and

1946

USSR/Chemistry - Hydrogen Peroxide, (Contd) Apr 1946
Generation of

produces peroxides of hydrogen. Catalyst found which
will be incorporated into mass of electrode, or used
for coating electrode to prevent formation of per-
oxides in electrolyte, results of experiments per-
mitted conclusions to be drawn regarding reaction
mechanism in depolarization in presence of a catalyst
Submitted 16 Oct 1947.

1946



IOFA. Z. A.

USSR/Chemistry - Electrolysis
Chemistry - Amalgams

11 Jan 1948

"Kinetics of the Decomposition of Amalgams and Over-
voltages of Hydrogen at the Mercury Cathode in Alkaline
Solutions," Z. A. Iofa, Z. B. Iechukovskaya, *Ussr
Electrochem*, Moscow State U Issled M. V. Lomacov, 4 pp

"Dokl Akad Nauk SSSR, Kora Ser" Vol III, No 2

includes testing theory experimentally, authors inter-
posed in use of results of study of kinetics of de-
composition of amalgams to find and test the equation
for overvoltages of hydrogen at the mercurial cathode
in very diluted alkaline solutions. Experiments con-
firm hypothesis of A. N. Frumkin on electrochemical

USSR/Chemistry - Electrolysis (Contd) 11 Jan 1948

mechanism of process of decomposition of the amalgams.
Also prove and confirm dependence of overvoltage upon
the composition of diluted alkaline solutions, follow-
ing directly from Frumkin's theory on influence of the
structure of dual electrical layer on the kinetics of
discharge. Submitted by A. N. Frumkin, 29 Oct 1947.

4774

IOFA, Z.A.

22971 Reaktsiya vosstanovleniya kisloroda na rtutnom elektrode. Zhurnal
fiz. khimii, 1949, Vyp. 7, C. 828-30. Bibliogr: 9 Nazv.

SO: LETOPIS' NO. 31, 1949

IOFA, Z. A.

30165

Mirlina, S. Y. i moisyeyeva, N. B. izucheniye protsyessov, protyakayu
shchyennikh na tsinkovom elektrodye elyemyeth so. shchyoschnim
elyek-trolitom. Zhurnal prikl. Khimii, 1949, No. 9 C. 983-94.---Bibliogr:
C.994

SO: LETOPIS' NO. 34

CA

4

Processes taking place on the zinc electrode of an alkaline cell. *Zh. Anal. Khim.*, N. Ya. Mitina, and N. B. Molodtsova (M. V. Lomonosov State Univ., Moscow) *Zhur. Priklad. Khim.* (J. Applied Chem.) 22, 983-98 (1949). (1) The Zn electrode of service of the alk. Zn-C cell is characterized by pptn of $Zn(OH)_2$ according to $KH_2ZnCl_2 + H_2O \rightarrow Zn(OH)_2 + KOH$. To elucidate the nature of this process, the system $ZnO-KOH-H_2O$ was studied at 0, 15, and 30°. True equil. is not reached even after 3 months, either by shaking ZnO with a KOH soln. or by pptn. from a supersatd. soln. With increasing KOH concn., the Zn content in the soln. increases. At 30°, the curve is limited by the final point of soly. of ZnO and KOH , and no solid zincate is formed; the soln. at that point contains 2.81 equiv./kg. of zincate. At 0°, the zincate content of the soln. is 1.27-1.65 equiv./kg., and the solid phase is a mixt. of ZnO , $KOH \cdot 3H_2O$, and KH_2ZnCl_2 ; the transition of the solid phase from ZnO to KH_2ZnCl_2 occurs at 8.1 equiv./kg. of free alkali and 2.81 of Zn in the soln. At 30°, prolonged agitation results in gradual "aging" of the solid, consisting in gradual loss of H_2O , and resulting in gradual decrease of the soly. which draws closer to the equil. curve, as compared to the abnormally high soly. of freshly pptd. $Zn(OH)_2$. In the alk. cell, the zincate soln. formed at the beginning of the 2nd period are distinctly supersatd. even in comparison with the soly. of freshly pptd. $Zn(OH)_2$. Thus, in KOH 5.5 equiv./kg., fresh orthorhombic $Zn(OH)_2$ dissolves, at 0, 20, and 30°, to the extent of 1.75, 2.0, and 3.0 equiv./kg., resp., whereas in the cell the concns. at 0 and at 30° are 4.4 and 3.8, resp., against an equil. concn. of 1.20 equiv./kg. The supersatd. solns. evidently represent not true mol. but colloidal solns. in which the disperse phase forms aging centers. In the alk. cell, the solid ppt. formed in concd. alkali will, as a rule,

be ZnO ; at medium concns., $Zn(OH)_2$. (2) In anodic polarization of Zn in pure KOH and in KOH contg. KH_2ZnCl_2 , the crit. c.d. D_c corresponding to rapid passivation decreases with decreasing concn. of KOH and with increasing concn. of KH_2ZnCl_2 ; decrease of the temp. acts in the same direction, much more strongly in the presence of zincate. On depolarization, one observes a series of potential, at 1.5 and 0.5 v. in pure KOH , and at 1.0 and 0.5 v. in the presence of

KH_2ZnCl_2 . The passivating film formed at D_c is evidently the result of the rate of formation of $Zn(OH)_2$ being greater than the rate of its soly. On intensive stirring, the crit. D_c increases, and the potential becomes more pos., but the open-circuit overvoltage remains unchanged. Passivation of the Zn anode is related directly to the structure of the concd. KOH . A striking illustration is the fact that in concd. KOH solns. (35-40%), there is no passivation at room temp., but passivation does set in at the beginning of the 2nd period below 0°; in contrast, in less concd. KOH (15-25%), the Zn anode becomes passive at room temp. but never below 0°. The passivation is evidently due to formation of a film of the rhombic $Zn(OH)_2$; there is no passivation under conditions where the solid film is either ZnO or the perovskite and acicular modification of $Zn(OH)_2$ which forms no soly. bearing passivating films.

1ST AND 2ND EDITIONS										PRECISES AND PROPERTY SHEET										26									
b										<p>Reduction of Oxygen at the Mercury Electrode. (In Russian.) Z. A. Iola, Ya. B. Shimshelovich, and E. P. Andreeva. <i>Zhurnal Fizicheskoi Khimii</i> (Journal of Physical Chemistry). v. 23, July 1949, p. 834-835.</p> <p>Above reduction is shown to take place by two steps: formation of H_2O_2 at low current densities, and reduction to water at high. Influencing factors were studied. An equation is proposed relating to electrode components during reduction of H_2O_2 in acid solutions.</p>																			
<p>ASAC-SLA METALLURGICAL LITERATURE CLASSIFICATION</p> <p>SCHEMATIC</p>										<p>RESEARCH</p> <p>RESEARCH AND DEV. LAB.</p>										<p>RESEARCH</p> <p>RESEARCH AND DEV. LAB.</p>									

The passivating effect of halide ions on iron in concentrated acid solutions. Z. A. Iofa and L. A. Medvedeva. (Moskov. Gos. Univ. Ser. Khim. Nauk, 1969, 213-14 (1969). -In Doklady Akad. Nauk S.S.S.R. 220, 213-14 (1969). -In view of elucidating the nature of the slowing-down effect of I^- , Br^- , and Cl^- ions (decreasing in that order) on the rate of dissoln. of Fe in H_2SO_4 , curves of the cathodic and anodic polarization potentials ϕ were detd. for Fe in 4 N and 4 N H_2SO_4 , without and with 0.2 N and 0.004 N KI, resp., as a function of the log of the c.d. Addn. of 0.2 N KI results in an increase of the overvoltage $\Delta\phi$ both in the anodic ionization of Fe and, particularly, in the cathodic evolution of H_2 . The stationary ϕ is shifted to the neg. side by 67 mv. The rate of spontaneous dissoln. is reduced 43 times. With 0.004 N KI, the cathodic $\Delta\phi$ depends on whether the measurements are made along decreasing or increasing c.d. In the 1st case, if the current is shut off for a few sec., and then turned on again, $\Delta\phi$ jumps up and remains high with increasing c.d.; the film formed is not disrupted as it would be, through desorption of anions at higher c.d. and more neg. ϕ ; if the film were formed by redox, it would be disrupted. In anodic polarization, the film is formed rapidly at lower c.d., but does not grow any further (i.e. $\Delta\phi$ does not increase any further) with the c.d. at high c.d. Without external source of current, the rate of dissoln. of Fe, in the presence of KI, decreases with time, falling to nearly zero when, apparently, the passivating film is completely formed. This occurs the sooner the greater the

concn. of KI. A surface of Fe, preliminarily passivated in KI + H_2SO_4 , is rapidly reactivated upon immersion in I^- -free H_2SO_4 . The same act. of KI, added to H_2SO_4 of varying concns., has the greatest effect the more highly concd. the H_2SO_4 ; this follows from the fact that, at the same c.d., the cathodic $\Delta\phi$ in the presence of 0.2 N KI remains unchanged between 0.1 N and 0.8 N H_2SO_4 . In 1 N solns. of H_2SO_4 , $HClO_4$, H_3PO_4 , HNO_3 , and H_2SO_4 (0.2 N KI), at 0.01 amp./sq. cm., the cathodic ϕ is -110, -445, -405, -180, and -50 mv. The variation of the anodic γ is in the reverse direction. The passivating effect of halide ions on Fe in acid soln. is attributed to the formation of a thin, insol. film of an Fe halide. In alk. soln., I^- and Br^- ions not only do not passivate Fe, but have a strong activating effect, evidently owing to displacement of O from the surface by halogens. The specificity of the passivating effect of halide ions on Fe in acid soln. is further illustrated by their well known activating effect on Cr under the same conditions. S. P. Ponomarev

7

CA

Polarographic determination of adsorbability of charcoal
with methylene blue. Z. A. Isha and G. M. Florinovich
(Moscow State Univ.). *Zashchita Lab.* 10, 142-4
(1950).—Agitate 0.2 g. of dried sample for 10 min. with
0.5% methylene blue soln. Treat a 10-ml. aliquot with
0.2 ml. $N H_2SO_4$ and make a polarogram in an open vessel
against a calibration curve. Charcoal high in ash should
be washed with 6 $N HCl$, followed by H_2O . G. M. K.

Reply to W. I. Kabanov, A. N. Premlin, Z. A. Ishakova and V. S. Bagatkin. *Zhur. Fiz. Khim.* 28, 1117-51 (1954); cf. preceding abstr.—Kabanov's theory of H overvoltage at \pm runs rests on the assumptions that the discharge, $H_2O^+ + e \rightarrow H_2 + H_2O$, is rapid and the slow step on cathodes with $e \rightarrow H_2 + H_2O$ is the desorption of at. H: $H_2 \rightarrow H$. The last assumption is known to be incorrect (P., C.A. 46, 8742). The 2nd is discussed. Attempts to detect at. H near the cathode by means of WO_3 have failed (B. and L., C.A. 41, 3701b), and although polymerization can be initiated by cathodic evolution of H, Perravine's work (C.A. 46, 8648b) makes it probable that this reaction starts at the surface and that it is propagated through the vol. of the solution and that it is propagated through the vol. of the solution not by at. H but by an org. radical. From the theoretical standpoint, desorption of at. H is ruled out because, at a standpoint, desorption of at. H is ruled out because, at a c.d. of 0.1 amp./sq. cm. with $\eta = 1.3$ v., a calcn. shows that the surface coverage θ is $1.2 \cdot 10^{-11}$; thus the velocity of desorption is $0.1 \cdot 10^{-11}$ mol./sq. cm. sec., which corresponds to $0.2 \cdot 10^{-10}$ amp./sq. cm. enough calcn. show that speeds to $0.2 \cdot 10^{-10}$ amp./sq. cm. $H_2 + H_2O^+ + e \rightarrow H_2 + H_2O$; electrochemical desorption, $H_2 + H_2O^+ + e \rightarrow H_2 + H_2O$; or recombination, $2H_2 \rightarrow H_2$, are much more rapid processes than $H_2 \rightarrow H$. Kabanov's position is definitely criticized. Michel Berard

FRUMKIN, Aleksandr Naumovich, 1895-. redaktor; BAGOTSKIY, V.S.; IOFA, N.A.;
KABANOV, B.N.

[Kinetic energy in electrode processes] Kinetika elektrodnykh protsessov.
[Pod red. A.N.Frumkina. Moskva] Izd-vo Moskovskogo universiteta, 1952.
318 p. (MLRA 6:7)
(Electrochemistry)

10FA, 2 A-

Chem 2³

Nuclear Sci Abs.
V-8 Jan 15, 1954
*Mineralogy, Metallurgy
and Ceramics*

ON THE THEORY OF DECOMPOSITION OF AMALGAMS BY
SOLUTIONS OF ELECTROLYTES. D. I. Kaplun and
Z. A. Iola. Translated from Zhur. Fiz. Khim. 28, 193-200
(1952). 15p. (ARC-ir-1715)

The decomposition of amalgams of alkali and alkaline
earth metals by aqueous solutions of electrolytes represents
a typical electrochemical process. The process of decom-
position of amalgams consists of two interconnected electro-
chemical reactions. The first reaction is the ionization of
the metal dissolved in Hg: $Me \sim Me^+ + e$. The second re-
action is the discharge of H^+ in acid solutions, $H_2O^+ + e \sim$
 $H_2O + H$, or in alkaline solution, $H_2O + e \sim OH^- + H$. Ex-
pressions for the potentials of decomposition and the re-
action kinetics of the amalgam in acid and alkaline solu-
tions are derived. (J.S.R.)

ME
4-21-54

IOFA, Z. A.

nuclear Sci. Ab.
V-8 Jan 15, 1954
Mineralogy, Metallurgy
and Ceramics

DECOMPOSITION OF AMALGAMS AND OVERVOLTAGE
OF HYDROGEN ON MERCURY IN ALKALINE SOLUTIONS.
G. I. Koster and Z. A. Iofa. Translated from Zhur. Fiz.
Khim. 29, 281-10(1952). 18p. (ABC-4r-1718).

It was proved that the decomposition of amalgams diluted by water mixtures of electrolytes in an electrochemical reaction limited by the speed of the H_2 discharge. Decomposition kinetics for amalgams of K, Li, and Ca were studied in solutions of their hydroxides, and kinetic formulas, deduced theoretically from the electrochemical theory of interlinking electrode processes, are given. The value for H_2 overvoltage on a Hg cathode in alkaline solution was found. The dependence of the amount of overvoltage on the concentration of hydroxyl ions can be expressed as $\eta = 1.307 - 0.105 \log COH^-$. The influence of surface-active ions on the overvoltage of H_2 is discussed. (J.S.R.)

4-21-54

IOFA, Z. A.

USSR/Chemistry - Overvoltage

Sep 52

"The Effect of Surface-Active Agents on the Kinetics of the Discharge of Hydrogen Ions at the Mercury Electrode," N. V. Nikolayeva, A. N. Frumkin, and Z. A. Iofa, Moscow State U

Zhur Fiz Khim, Vol 26, No 9, pp 1326-1336

Investigated effect of sol surface-active agents (butyl alc, amyl alc, hexyl alc, heptyl alc, caproic acid) and the effect of insol long-chain compds (cetyl alc, palmitic acid, and myristic acid) on the magnitude of the H overvoltage at an Hg cathode in HCl, HBr, and H₂SO₄ of 2 N-20 N concns. The surface-active

263724

agents increase the H overvoltage at the Hg electrode if the value of the cd and the magnitude of the overvoltage increase do not exceed a certain limit. With an increase in concn of org substances in soln, there is an increase of overvoltage and the range of potentials in which an effect on the H overvoltage is observed. The increase in overvoltage occurred only at those potentials where the mols of the surface-active agents were adsorbed. The effect of the org substances investigated on the magnitude of overvoltage was detd by the reduction in the rate of H ion discharge.

263724

1. FRUMKIN, A. N., IOFA, Z. A., DAGOTSKAYA, V. S.
2. USSR (600)
4. Adsorption
7. N. I. Kobozev's adsorption theory of overvoltage. Zhur. fiz. khim. 26 no. 12, 1952.
9. Monthly List of Russian Accessions, Library of Congress, May 1953, Uncl.

IOFA, Z.A.; LYAKHOVETSKAYA, Ye.I.; SHARIFOV, K.

Effect of halogen ions on adsorption of organic cations at an iron surface.
C.R. Acad. Sci. U.R.S.S. '52, 84, 543-546. (MLRA 5:6)
(BA -AI Ap '53:337)

PA 247T14

USSR/Chemistry - Corrosion

21 Sep 52

"The Mechanism of the Action of Inhibitors on Hydrogen Brittleness of Steel in Sulfuric Acid," Z. A. Iofa and E. I. Lyakhovetskaya, Moscow State U in M. V. Lomonosov

DAN SSSR, Vol 86, No 3, pp 577-580

Surface active agents and negative catalysts of the reaction of recombination of H atoms prevent the diffusion of hydrogen into steel wire and protect it from becoming brittle. Presented by Acad A. N. Frankin 15 Jul 52

247T14

B.T.R.

Vol. 3, No. 4

Apr. 54

LOPA, Z. A.

Influence of Surface-Active Substances on the Velocity of
Electrochemical Reactions and the Action of Inhibitors on the
Dissolution of Metals in Acids. Z. A. Lopa, E. P. Arshava,
and N. V. Nikolaeva (*Trudy Sverdlovskogo gos. universiteta*
1956, 1983, 294-306).—[in Russian]. A review of published
Russian work. 17 ref.—G. V. E. T.

IOFA, Z. A. Prof.

"Concerning the Mechanism of Action of Inhibitors of the Acid Corrosion of Iron and Concerning the Role of Halogen Ions in This Process," a paper given at the All-University Scientific Conference "Lomonosov Lectures", Vest. Mosk. Un., No.8, 1953.

Translation U-7895, 1 Mar 56

ICFM, 20

USSR .

Measurement of the adsorption of iodide ions on iron.
Z. A. Iola and G. B. Rozhdetsvenskaya. *Doklady Akad. e.*
Nauk S.S.S.R. 91, 1153-55 (1953); cf. *C.A.* 44, 1833d,
9378c.—The adsorption of I^- on powdered Fe was detd.
by use of a soln. of 1N H_2SO_4 + 0.001N KI that had been
freed of O_2 . Both radioactive isotopes and polarographic
analysis were used. The adsorption increased with in-
crease in the concn. of H_2SO_4 . This explains the effect of
KI on the H overvoltage on an Fe electrode reported
earlier (loc. cit.). The adsorption varied from 1 to $4 \times$
 10^{-4} g. at./sq. cm. which corresponds to a 60% filling of the
surface.
J. Rovtar Leach

62
D

IOFA, Z.A.; ROZHDESTVENSKAYA, G.B.; FRUMKIN, A.N., akademik.

Measuring the adsorption of iodine ions on iron. Dokl. AN SSSR 91 no. 5: 1159-1162 Ag '53. (MLA 6:8)

1. Akademiya nauk SSSR (for Frumkin).
(Adsorption) (Iodine) (Iron)

IOFA, Z. A.

USSR/Chemistry Physical chemistry

Card : 1/1

Authors : IOFA, Z. A.

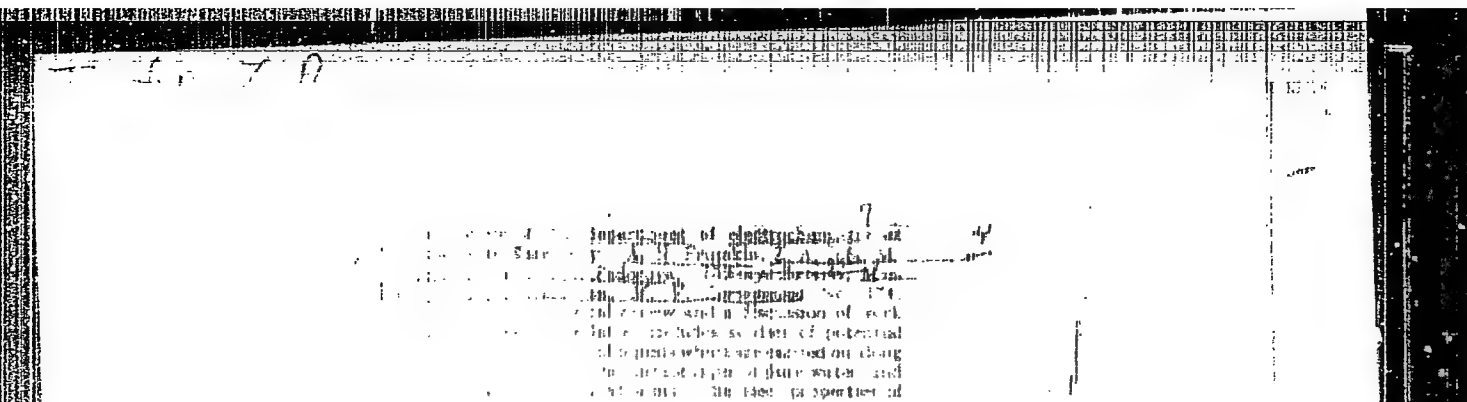
Title : About hydrogen supertension on mercury in alkaline solutions (Letter to editor)

Periodical : Zhur. fiz. khim. 28, Ed. 6, 1163 - 1165, June 1954

Abstract : The factors increasing or reducing the H-supertension on Hg in alkaline media (solutions), are explained. Various mathematical formulas, for the calculation of H-supertension in alkali solutions of different composition, are presented. Eight references: 6 USSR, 1 Czech, and 1 German. Graph.

Institution : The M. V. Lomonosov State University, Moscow

Submitted : November 28, 1953



"APPROVED FOR RELEASE: 08/10/2001

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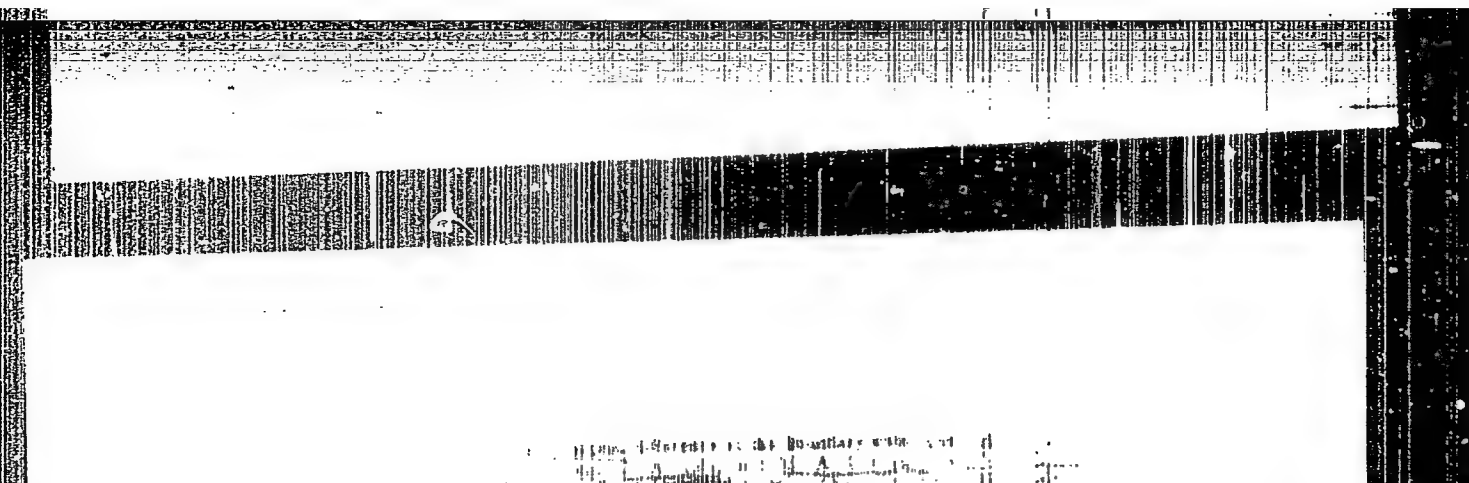
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TOLAN, L. A.

... of the nickel electrode capacity ...
... of the polarizing current ...

2

SOV/137-59-3-7133

Translation from: Referativnyy zhurnal. Metallurgiya, 1959, Nr 3, p 314 (USSR)

AUTHOR: Iofa, Z. A.

TITLE: On the Mechanism of the Action of Surface-active Substances in Electrochemical Reactions and Corrosion Processes (O mekhanizme deystviya poverkhnostno-aktivnykh veshchestv na elektrokhimicheskiye reaktsii i korrozionnyye protsessy)

PERIODICAL: Sb. Kom-t po korrozii i zashchite metallov Vses. sov. nauchno-tekhn. o-v, 1957, Nr 2, pp 26-35

ABSTRACT: Adsorption of surface-active substances on a metal surface (S) with potentials differing from those of the zero charge depends on the sign and the magnitude of its charge. Organic cations are adsorbed on a positively charged S and cause the appearance of the positive ψ_1 potential. Electrochemical reactions are slowed down either by rendering the metal S "water repellent" or by introduction of large molecules and organic ions into the duplex layer, thus decreasing its field strength. The specific action of haloid ions is associated with their chemical sorption on the metal S and a consequent change in the sign of the charge. HS^- and SO_3^{2-} ions intensify the corrosion of Fe

Card 1/2

SOV/137-59-3-7133

On the Mechanism of the Action of Surface-active Substances

and increase the protective action of cation inhibitors in acid solutions. The action of thiourea is also based on the formation of HS^- during the decomposition of the former in the solution. Bibliography: 19 references.

S. G.

Card 2/2

IOFA, Z.A., professor.

The fourth conference on electrochemistry. Vest.Mosk.un. 12 no.1:
202-205 '57. (MLRA 10:8)
(Moscow--Electrochemistry--Congresses)

IOFA, Z.A.; FRUMKIN, A.N.; MAZNICHENKO, E.A.

Effect of the nature of cations on the rate of hydrogen
separation from alkaline solutions [with summary in English].
Zhur.fiz.khim. 31 no.9:2042-2051 S '57. (MIRA 11:1)

1. Moskovskiy gosudarstvennyy universitet im. M.V. Lomonosova.
(Cations) (Hydrogen) (Solution (Chemistry))

IOFA, Z.A.

76-10-10/34

AUTHORS: Iofa, Z.A., Besproskurnov, G.G.

TITLE: A Study of the Mechanism of the Atmospheric Corrosion of Iron in the Presence of Sulphur Dioxide as Aggressive Agent (Issledovaniye mekhanizma atmosferno korrozii zheleza v prisutstvii sernistogo gaza kak agressora)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 10, pp. 2236-2244 (USSR)

ABSTRACT: The corrosion of iron in an atmosphere containing sulphur dioxide is investigated. It is shown that the initial velocity of the corrosion increases with the increase of concentration of sulphur dioxide in air. A decrease of humidity reduces the corrosion velocity and the corrosion stops practically at a relative humidity of less than 65 - 70 %. It is shown that after 25 - 30 hours the corrosion forms a rust layer in humid air which retards this process: the greater the concentration of the sulphur dioxide in air is, the thicker is the rust layer which is formed during this time. It is shown that the corrosion which began in a completely pure humid air is continued, however, with lower velocity. The rust analysis carried out by means

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A Study of the Mechanism of the Atmospheric Corrosion of Iron in the Presence of Sulphur Dioxide as Aggressive Agent

of the radioactive sulphur isotope showed that in an atmosphere without oxygen (hydrogen and nitrogen) the ratio of the equivalent of sulphur to iron in the rust approaches to 0.33 and almost does not change with the corrosion time. The ratio is reduced with the time in the presence of oxygen. Conclusions are drawn on the process in the case of a corrosion in the atmosphere in the presence of sulphur dioxide. The corrosion takes place according to the electrochemical process under the humidity layer at the surface of the iron. The sulphuric acid produced in the case of a dissolution of SO_2 in this layer (cover) is the oxidizing agent which depolarizes the cathode reaction and is restored up to the sulphide ions. Through the occurring negative ψ_1 -potential the sulphide ions also stimulate the anode reaction. The depolarization takes place in air by the oxygen of the cathode process and the oxidation of the bivalent iron to a trivalent one. Apparently the sulphide ions catalyze the last reaction. There are 7 figures, 4 tables, 16 Slavic references.

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IOFH, Z. H.

AUTHORS: Nikiforova, M. M., and Iofa, Z. A.

20-6-22/48

TITLE: Passivation and De-Passivation of a Lead Anode in Concentrated Perchloric-, Fluoboric- and Fluor-Silicic Acids (Passivatsiya i depassivatsiya svintsovogo anoda v kontsentrirrovannykh kremneftoristovodorodnoy, khlornoy i boreftoristovodorodnoy kislotakh).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 115, Nr 6, pp. 1131-1134 (USSR.).

ABSTRACT: Investigations of the electrochemical system PbO_2 /acid/Pb with electrolytes from the acids described in the title and from silicon-fluor-hydracric were recently described in publications. Such elements act at low temperatures and in high discharge currents. The behavior of the lead anode and the conditions leading to its passivation in the mentioned acids were never thoroughly studied. In an acid of a given concentration and at constant temperature the lead anode remains active and little polarizes, provided that the anodic current density (i_a) does not exceed a certain critical value (i_{cr}) which is independent of a number of factors. Experiments showed that the period of time after whose expiration the anode is passivated (t_p) depends on the current-density chosen. This period of time is (in a t_p varying from some seconds to 1,5 hours) with a good approx-

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Passivation and De-Passivation of a Lead Anode in Concentrated Perchloric-, Fluoboric- and Fluor-Silicic Acids.

Passivation determined by the equation: $\lg t_p = A - B \lg i_a$ where A and B are constants. The decrease in temperature in all cases reduces the i_a - value at which the anode is within the same period of time passivated. In strong reductions of concentration of the acid this current density markedly increases. In H_2SiF_6 lead is most easily passivated. In $HClO_4$ and in HF lead is passivated at $t > -20^\circ C$ and at $i_a < 40 \text{ ma / cm}^2$. Figure 1 shows a typical variation curve of the potential in the course of time in anode-lead-passivations in 7,9 N H_2SiF_6 at $i_a = 40 \text{ ma / cm}^2$ and at $t = -10^\circ C$ without stirring. At first the potential suddenly increases due to the resistance of the salt-layer from PbO_2 , whereas the current decreases from 40 to 5 ma / cm^2 . Then the passage of current is made possible due to the PbO_2 -formation in the pores, since this salt possesses a good electric conductivity. Therefore the potential decreases and the current again increases to its initial value. The passivating PbO_2 -layer, however, soon spreads over the entire surface of the

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